

Claims

- [c1] An apparatus for producing co-extruded pasta from pasta ingredients and filler comprises:
- a pasta dough extruder for producing a pasta strand;
 - means for converting the pasta strand into a plurality of strands;
 - a plurality of co-extrusion die inserts positioned in a straight line for forming and filling the pasta strands; and,
 - a single crimp/cut die for forming a predetermined pasta configuration.
- [c2] An apparatus for producing co-extruded pasta in accordance with Claim 1 further including:
- a feed hopper having an input for receiving pasta ingredients and an output;
 - a mixer located at the hopper output for combining the ingredients into a mixture; and, wherein the extruder comprises
 - an auger screw coupled to the mixer for forming the mixture into a cylindrical strand of pasta dough.
- [c3] An apparatus for producing co-extruded pasta in accordance with Claim 2 wherein the means for converting the pasta strand into a plurality of strands comprises:
- a first Y-manifold for dividing the dough strand from the extruder into two continuous strands of dough; and,
 - means for subdividing the two strands of dough into four continuous strands of dough.
- [c4] An apparatus for producing co-extruded pasta in accordance with Claim 1 further including:
- a plurality of adjustable metering valves to adjust the flow of dough to the co-extrusion die inserts;
 - means for filling the co-extruded strands; and,
 - a conveyor receiving the formed and cut pasta from the single die.
- [c5] An apparatus for producing co-extruded pasta in accordance with Claim 4 further including:
- a hot water cooker receiving the formed and filled pasta from the conveyor.

[c6] An apparatus for producing co-extruded pasta in accordance with Claim 4 further including:
a filling means having an input to receive filling and an output;
an eight column positive displacement pump coupled to the output of the filling means, each of said independent displacement pumps servicing a co-extrusion die insert, and including eight flexible hoses of equal length joining each pump to a corresponding die insert.

[c7] An apparatus for producing co-extruded pasta in accordance with Claim 6 further including:
the pump includes variable speed control to control the weight/volume of filling through the hoses.

[c8] An apparatus for producing co-extruded pasta in accordance with Claim 4 further including:
a backing roller positioned adjacent the crimp/cut die between which the filled pasta dough strands drop vertically and are crimp-sealed and cut to length.

[c9] An apparatus for producing co-extruded pasta in accordance with Claim 9 wherein:
the pasta is rigatoni.

[c10] A method for producing co-extruded pasta from pasta ingredients and a filler comprising:
feeding the pasta ingredients to a mixer;
mixing the ingredients and moving the mixture to an extruder;
extruding the mixture to form a cylindrical strand of pasta dough;
dividing the dough into a plurality of strands;
feeding and individually metering the strand flow to a plurality of co-extrusion die inserts arranged in a straight line; and,
crimping and cutting the co-extruded pasta strands to form a predetermined stuffed pasta configuration.

[c11] A method for producing co-extruded pasta in accordance with Claim 10 further including the steps of:

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	

[illegible]